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| APPLICATION NO.  | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|--|-------------|----------------------|---------------------|------------------|
| 10/814,653   | 04/01/2004  | Avi Kopelman         | 25394               | 5906             |
| 20529  | 7590        | 01/14/2005           | EXAMINER            |                  |
| NATH & ASSOCIATES<br>1030 15th STREET, NW<br>6TH FLOOR<br>WASHINGTON, DC 20005 |             |                      |                     | JARRETT, RYAN A  |
| ART UNIT   |             | PAPER NUMBER         |                     |                  |
|  |             | 2125                 |                     |                  |

DATE MAILED: 01/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

|                              |                        |                     |  |
|------------------------------|------------------------|---------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b> | <b>Applicant(s)</b> |  |
|                              | 10/814,653             | KOPELMAN ET AL.     |  |
|                              | <b>Examiner</b>        | <b>Art Unit</b>     |  |
|                              | Ryan A. Jarrett        | 2125                |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) Responsive to communication(s) filed on 01 April 2004.
- 2a) This action is FINAL.                    2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 1-28 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 01 April 2004 is/are: a) accepted or b) objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All    b) Some \* c) None of:
1. Certified copies of the priority documents have been received.
  2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____.   |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date <u>10/27,11/15,12/17</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
|  | 6) <input type="checkbox"/> Other: _____.                                   |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3, 5-10, 12-17, and 19-28 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Becker et al. U.S. Patent No. 4,411,626 (e.g., col. 1 lines 5-35, col. 1 line 55 – col. 2 line 19, col. 3 lines 41-68, col. 4 lines 1-13).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-3, 5-10, 12-17, and 19-28 are additionally rejected under 35 U.S.C. 103(a) as being unpatentable over Embert et al. U.S. Patent No. 6,691,764 in view of Becker et al. U.S. Patent No. 4,411,626. For example, Embert et al. discloses:

1. A method for the fabrication of a dental coping of a dental prosthesis of at least one tooth to be fitted over a tooth preparation, comprising: a) providing a three-dimensional (3D) digital data relating to the patient's dentition, said 3D data including data representative of the surface topology of said

preparation and its surroundings (e.g., Fig. 4 #52); b) generating a three-dimensional (3D) virtual model of a dental coping for said at least one tooth such that the inner surface of the virtual coping fits over a portion of the surface of the tooth preparation in close engagement (e.g., Fig. 4 #54); c) generating a **computerized numerical control (CNC)** set of instructions corresponding to the 3D model of said coping (e.g., Fig. 4 #62); d) based on said set of instructions, fabricating a wax model of said coping by an automated prototyping system (e.g., Fig. 4 #64) **computerized numerical control (CNC) milling machine**; and e) fabricating a dental coping from the wax model (e.g., Fig. 4 #65,66).

2. A method according to Claim 1, wherein the 3D digital data comprises finish line data of said coping (the virtual prosthetic or coping designed in Fig. 4 #54 of Embert inherently includes a "finish line", since the "finish line" is just the end or bottom edge of the coping, and the 3D virtual model of Embert comprises the morphology of the prosthetic – see col. 3 lines 51-52).
3. A method according to claim 1, wherein step (a) is performed using a suitable optical scanner (e.g., col. 3 lines 47-51).
5. A method according to claim 1, wherein step (a) is performed directly on the intraoral cavity comprising said preparation (e.g., col. 3 lines 47-51).
6. A method according to claim 1, wherein said digital data of step (a) is obtained from a virtual model of a prosthesis designed for said preparation (e.g., col. 3 lines 47-51).
7. A method according to claim 1, wherein in step (b) an external surface of the virtual coping is created based on predetermined criteria (e.g., col. 3 lines 51-55).
8. A method according to claim 7, wherein said criteria relate to providing adequate mechanical strength for the prosthesis (e.g., col. 3 lines 51-55).
9. A method according to claim 1, wherein step (e) is carried out according to a lost wax process (e.g., col. 2 line 62 – col. 3 line 5).
10. A method according to claim 1, wherein said dental coping is made from a suitable metal (e.g., col. 5 lines 10-19).
12. A method according to claim 1, wherein said dental coping is adapted for use with a crown prosthesis (e.g., col. 5 lines 10-19).

13. A method according to claim 1, wherein said dental coping is adapted for use with a bridge prosthesis (e.g., col. 5 lines 10-19).
14. A method according to claim 13, wherein step (d) further comprises the steps of providing wax replicas of suitable connectors and/or one or more pontics, and joining said replicas to wax models of the copings required for said prosthesis (e.g., col. 4 lines 37-42; Fig. 2, Fig. 3).
15. A dental coping, fabricated according to the method of claim 1 (e.g., Fig. 4 #66).

Embert does not expressly disclose that the set of instructions generated corresponding to the 3D virtual model of the coping are computerized numerical control instructions (CNC), or that the wax model of the coping is fabricated using a computerized numerical control (CNC) milling machine. Embert instead uses a rapid prototyping system to fabricate the wax model of the coping. However, Embert does disclose that other devices may be used to fabricate the wax model without departing from the spirit and nature of the invention (col. 4 lines 19-24). Embert also discloses that it is known to use CNC milling machines to fabricate prostheses (col. 2 lines 20-27).

Becker discloses a process for preparing a crown portion to be fixed on a tooth, comprising generating a CNC set of instructions corresponding to a 3D model of a coping, and based on the set of instructions, fabricating a wax model of the coping by a CNC milling machine (e.g., col. 3 lines 59-68). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Embert with Becker since Becker teaches that the use of a CNC machine to fabricate a wax model enables the very difficult molding operation concerning the casting model (wax model) to be automated. By the automatic operation, waste work is avoided and,

moreover, it is ensured that no more material is used for the crown portion than absolutely necessary (e.g., col. 1 line 67 – col. 2 line 19).

5. Claims 4 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Becker as applied to claims 3 and 17 above, and further in view of WO 00/08415. Becker does not appear to explicitly disclose that the optical scanner comprises a probe for determining three dimensional structure by confocal focusing of an array of light beams. However, WO 00/08415 discloses an optical scanner capable of performing this function. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Becker with WO 00/08415 since WO 00/08415 teaches the use of an optical scanner that accurately determines three dimensional structure by confocal focusing of an array of light beams.

6. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Becker as applied to claim 1 above, and further in view of Hofmann et al. U.S. Patent 6,126,732. Becker does not expressly disclose that the dental coping is made from a ceramic material. However, Hofmann discloses a dental prosthesis in which a ceramic molding composition is pressed into a mold cavity to form the prosthesis. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Becker with Hofmann since Hofmann teaches that ceramic dental prostheses can be more desirable than metal prostheses for multiple different reasons, one being aesthetic value (e.g., col. 1 lines 13-55, col. 4 lines 1-55).

7. Claims 4 and 18 are additionally rejected under 35 U.S.C. 103(a) as being unpatentable over Embert in view of Becker as applied to claims 3 and 17 above, and further in view of WO 00/08415. Embert in view of Becker does not appear to explicitly disclose that the optical scanner comprises a probe for determining three dimensional structure by confocal focusing of an array of light beams, although the Cynovad Pro 50 scanner disclosed by Embert (col. 3 lines 30-33) most likely performs this function. However, WO 00/08415 discloses an optical scanner capable of performing this function. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Embert in view of Becker with WO 00/08415 since WO 00/08415 teaches the use of an optical scanner that accurately determines three dimensional structure by confocal focusing of an array of light beams.

8. Claim 11 is additionally rejected under 35 U.S.C. 103(a) as being unpatentable over Embert in view of Becker as applied to claim 1 above, and further in view of Hofmann et al. U.S. Patent 6,126,732. Embert in view of Becker does not expressly disclose that the dental coping is made from a ceramic material. However, Hofmann discloses a dental prosthesis in which in which a ceramic molding composition is pressed into a mold cavity to form the prosthesis. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Embert in view of Becker with Hofmann since Hofmann teaches that ceramic

Art Unit: 2125

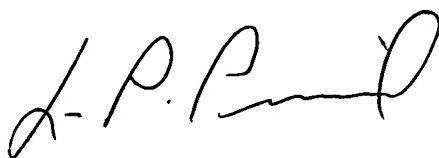
dental prostheses can be more desirable than metal prostheses for multiple different reasons, one being aesthetic value (e.g., col. 1 lines 13-55, col. 4 lines 1-55).

### ***Conclusion***

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan A. Jarrett whose telephone number is (571) 272-3742. The examiner can normally be reached on 10:00-6:30 M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ryan A. Jarrett  
Examiner  
Art Unit 2125

1/8/05

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SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100